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Editorial

Locomotive syndrome: disability-free life expectancy and locomotive organ health in a "super-aged" society

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In 2007, people aged 65 years or older accounted for 22% of Japan's entire population, and the nation is now facing the advent of a "super-aged" society earlier and more rapidly than any other country in the world. As a result, orthopedic surgeons will need to deal with an increasing number of diseases related directly to aging, such as joint disorders, spinal disorders, and fragility fractures. For example, artificial knee joint operations are now three times more common than they were 10 years ago. There has also been an increase in the number of patients requiring conservative orthopedic treatment. Considering that there are likely to be many elderly people with lower back pain or knee pain, there is concern that many of them may not receive proper medical care.

Long-term care and locomotive organ health

With this increase in the elderly population, more and more people are becoming concerned about the health problems of aging. The greatest concern is about becoming bedridden or demented and thus requiring nursing care. In 2001 the major reasons for which the elderly aged 75 or older needed long-term care services included cerebrovascular disorders (21.1%), dementia (12.9%), and importantly, problems related to the locomotive organs, such as falls/fractures (13.6%) and joint disorders (10.6%). Nevertheless, the diseases that people most hope to avoid when they get older are cancer, dementia, cerebrovascular disorders, and heart disease, in that order, and concerns about problems related to the locomotive organs are, in fact, ranked much lower.

In the past it has often been pointed out that physical exercise is important. In its long-term care–prevention programs, the Japanese government has promoted improvement of locomotive ability in the elderly as a means of preventing geriatric syndrome or disuse syndrome. In spite of these countermeasures, there still seems to be a lack of awareness among the general public that diseases of the locomotive organs can cause a person to become bedridden or to require long-term nursing care.

A new concept for recognizing the need for locomotive-organ health in a super-aged society

Aging is associated with an increased risk of problems related to the locomotive organs. The average life expectancy of the Japanese population is 79.2 years for men and 86.0 years for women. Consequently, Japanese in theory need to be able to maintain and utilize their own locomotive organs for about 80 years. Today, the elderly of Japan aged 75 years or older total 12,700,000, which is 9.9% of the total population — a significant number. This is an unprecedented state of affairs for humans, who have evolved to utilize bipedal locomotion, and it cannot be addressed by mere extension of customary measures that have been applied in the past for only small numbers of people. In order to grasp the situation we are facing, let us take the management of a railway station as an example. If the station had only 50 incoming and outgoing passengers on an average day, then the station master would be able to be in charge of booking, ticket checking, and traffic control, all on his own. But for the management of Tokyo's bustling Shinjuku Station with its 3,460,000 incoming and outgoing passengers on an average day, it is clear that a different system has to be developed and put into place. Passengers, too, would be required to understand new ways of using the railroad, such as passing through automatic ticket gates and queuing up properly on platforms.

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Since 1963, the Japanese government has been implementing various policies that deal with changes in the living environment of the elderly. In 2000, the Nursing Care Insurance (*Kaigo Hoken*) went into effect. Under this program, a preliminary questionnaire is being distributed to identify those among the elderly who are most likely to require nursing care. However, the number of those answering the questionnaire accounts for only 23.9% of those who should be entitled to a preliminary check. A report pointed out that improving public awareness was a problem.

This new state of affairs requires a new concept. The Japanese Orthopaedic Association has proposed the concept of a "locomotive syndrome." The locomotive syndrome refers to conditions under which the elderly have been receiving care services, or high-risk conditions under which they may soon require care services, due to problems of the locomotive organs. The word "locomotive" has a positive connotation. The locomotive organs are essential for the well-being of humans. This new concept of the locomotive syndrome was chosen to eliminate negative ways of thinking and is in line with the aims of the global Bone and Joint Decade (BJD).

Locomotive syndrome symptoms

People who experience some locomotion and postural instability may possibly have locomotive syndrome. To be precise, you probably have the syndrome if you need to use a handrail when going upstairs, if you cannot stand up from a chair without some support, if it is difficult to continue walking for 15 minutes, if you are afraid of falling, if you have experienced a fall within the past year, if you cannot put on a pair of socks while standing on one leg, if you cannot cross the road at a crossing before the traffic light changes, or if you stumble or slip inside your home. Studies are now under way to develop early-detection tools so that the locomotive syndrome can be detected during standard health examinations.

Knowledge about the locomotive organs is essential for maintaining their good health

To become aware of diseases of the locomotive organs, people require knowledge about how to keep those organs in good health. Locomotive organs such as bones, joints, muscles, and ligaments metabolize through processes of resorption and formation, and their tissues are always being replaced by new ones. The balance of resorption and formation is affected by mechanical stress. It is important that this mechanical stress be within a proper range. Insufficient exercise or mechanical stress, as observed in the disuse syndrome, is known to be a cause of reduced locomotive function, but excessive mechanical stress can also be a problem. Because diseases of the locomotive organs in the elderly are often multiple, detailed measures and physical exercises (or locomotion training) should be tailored for each person on the basis of individual medical examinations. In diseases of the locomotive organs, the symptoms may be insidious because progression is usually quite slow. For this reason the locomotive organs are among the so-called "silent organs."

Healthy locomotive organs are the foundation for disability-free life expectancy

Diseases of the locomotive organs are not only a cause of nursing care requirements themselves, but also are related to other causes of care requirements. There are data indicating that many people with osteoarthritis of the knee or lumbar spine are also likely to have metabolic syndrome, or that patients with knee osteoarthritis are likely to have a high rate of dementia. Healthy locomotive organs are the foundation for disability-free life expectancy for humans.

Extended disability-free life expectancy is now the hope of many people. If their hopes are to be realized, we need to arouse public interest in the locomotive organs. The Japanese Orthopaedic Association will support programs to achieve that goal.